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Superabsorbent polymer — Sodium polyacrylate resin for absorbing blood —

Part 1: Test methods

Résines super-absorbantes — Polyacrylate de sodium pour l'absorption du sang —

Partie 1: Méthodes d'essai

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Foreword

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Introduction

The test methods described in this document have been practically used by relevant production enterprises for several years and have proven to be reliable with respect to common criteria of quality of test methods (validity, repeatability, etc.). They are applicable to testing superabsorbent polymer of sodium polyacrylate used in hygiene products (such as sanitary towels and pads) and medical products (such as tourniquets and surgery coats).

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Superabsorbent polymer — Sodium polyacrylate resin for absorbing blood —

Part 1: Test methods

1 Scope

This document specifies the testing methods for the properties of superabsorbent polymer (SAP) of sodium polyacrylate used in physical hygiene and medical products for absorbing blood. It also gives a formulation for simulated blood, a kind of viscous liquid, for replacing blood when testing the properties of the superabsorbent polymer.

The test methods and simulated blood in this document apply to sodium polyacrylate resin, as raw material, and apply to SAP for the final products used for absorbing blood.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 758, *Liquid chemical products for industrial use — Determination of density at 20 °C*

ISO 2470-2, *Paper, board and pulps — Measurement of diffuse blue reflectance factor — Part 2: Outdoor daylight conditions (D65 brightness)*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 6353-1, *Reagents for chemical analysis — Part 1: General test methods*

ISO 6388, *Surface active agents — Determination of flow properties using a rotational viscometer*

ISO 17190-1, *Urine-absorbing aids for incontinence — Test methods for characterizing polymer-based absorbent materials — Part 1: Determination of pH*

ISO 17190-2, *Urine-absorbing aids for incontinence — Test methods for characterizing polymer-based absorbent materials — Part 2: Determination of amount of residual monomers*

ISO 17190-3, *Urine-absorbing aids for incontinence — Test methods for characterizing polymer-based absorbent materials — Part 3: Determination of particle size distribution by sieve fractionation*

ISO 17190-4, *Urine-absorbing aids for incontinence — Test methods for characterizing polymer-based absorbent materials — Part 4: Determination of moisture content by mass loss upon heating*

ISO 17190-9, *Urine-absorbing aids for incontinence — Test methods for characterizing polymer-based absorbent materials — Part 9: Gravimetric determination of density*

EN 14370, *Surface active agents — Determination of surface tension*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
superabsorbent polymer
SAP
polymer that can absorb and retain extremely large amount of liquid relative to its mass

Note 1 to entry: Absorption is dependent on liquid type.

Note 2 to entry: It is insoluble in water or organic solvents. However, after it has contacted with water, in a short time it swells into gel. Even an external pressure cannot force out the liquid.

3.2
amount of residual monomers
quantity of remaining sodium acrylate and acrylic acid in the sodium polyacrylate resin

Note 1 to entry: It is expressed in milligrams per kilogram (mg/kg).

3.3
volatile content
quantity of water and other small molecules in the sodium polyacrylate resin

Note 1 to entry: It is expressed as a percentage by mass (%).

3.4
particle size distribution
percentage of each of fraction of the particles based on mass

3.5
bulk density
mass of sodium polyacrylate resin per unit volume after free fall including voids

3.6
simulated blood
solution having a similar absorption trend as in human blood

3.7
simulated blood absorption capacity
amount of *simulated blood* (3.6) absorbed by 1 g of sodium polyacrylate resin after a set amount of time

3.8
simulated blood absorption rate
time taken for 1 g of sodium polyacrylate resin to absorb 5,0 ml of *simulated blood* (3.6)

4 Test methods

4.1 General

Use only reagents of recognized analytical grade and grade 3 water as specified in ISO 3696, unless otherwise specified.

4.2 Determination of amount of residual monomers

The amount of residual monomers shall be determined according to ISO 17190-2.

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